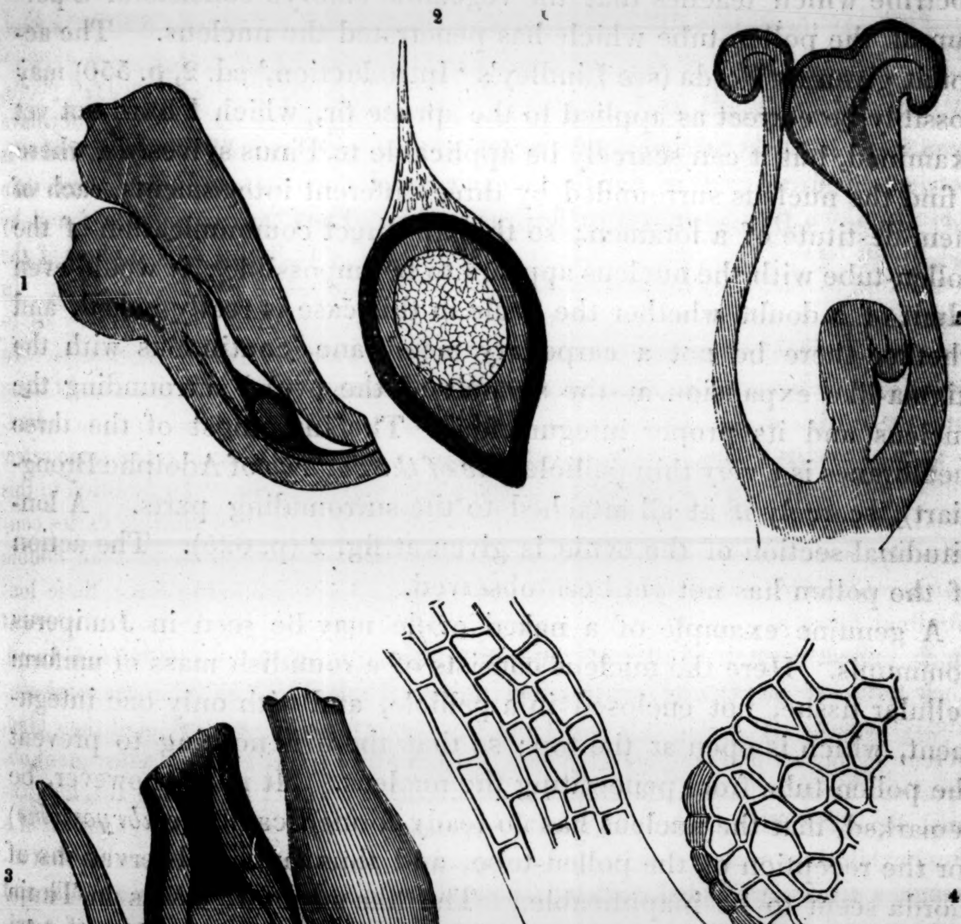
THE PHYTOLOGIST.

No. XXVI. | JULY, MDCCCXLIII. | PRICE 1s.

ART. CI. — *Researches in Embryogeny.* By W. WILSON, Esq.



1 and 2, Longitudinal sections of the ovule of Pinus sylvestris. 3, Longitudinal section of the ovule of Juniperus communis. 4, Section of the nucleus, and a portion of the integument of Juniperus communis (magnified 300 times). 5, Longitudinal section of the pistillum and ovule of Berberis vulgaris. All the figures are more or less magnified.

Having lately seen the articles on this subject by Schleiden, and by Mirbel and Spach, in the 'Annales des Sciences Naturelles,' published in April and May, 1839, it has been my wish to examine for myself how far the former of these writers had any foundation for his opinions. Hitherto I have not met with any evidence in favour of the doctrine which teaches that the vegetable embryo consists of a portion of the pollen-tube which has penetrated the nucleus. The account given by Corda (see Lindley's 'Introduction,' ed. 2, p. 550) may possibly be correct as applied to the spruce fir, which I have not yet examined, but it can scarcely be applicable to Pinus sylvestris, where I find the nucleus surrounded by three different integuments, each of them destitute of a foramen; so that all direct communication of the pollen-tube with the nucleus appears to be impossible: it would even admit of a doubt whether the ovule in this case is really naked, and whether there be not a carpellary membrane (continuous with the stigma-like expansion at the summit of the ovule) surrounding the nucleus and its proper integuments. The innermost of the three membranes is a very thin pellicle (*sac of the embryo* of Adolphe Brongniart), scarcely if at all attached to the surrounding parts. A longitudinal section of the ovule is given at fig. 2 (p. 625). The action of the pollen has not yet been observed.

A genuine example of a naked ovule may be seen in Juniperus communis. Here the nucleus consists of a roundish mass of uniform cellular tissue, not enclosed in a pellicle, and with only one integument, which is open at the top; so that there is nothing to prevent the pollen-tube from penetrating the nucleus. It must, however, be remarked, that the nucleus has no ready-formed cavity (*embryostome*) for the reception of the pollen-tube, and thus far the observations of Corda seem to be inapplicable. The like structure exists in Thuja occidentalis. Unfortunately, I cannot pursue the enquiry; as the male plants of both are inaccessible to me at this time. Fig. 3 (p. 625) represents a longitudinal section of the ovule of Juniperus; at fig. 4 is shown another actual section (exceedingly thin) of the nucleus, with a portion of the integument, carefully copied from nature, magnified about 300 times.

In Berberis vulgaris there are some interesting features. The ovarium is a cavity, imperfectly closed at the top by the stigma. There is no proper style, and no central stigmatic tissue; so that if any pollen-tubes are formed, they must pass at once into the ovarium, and into the foramen of the ovule: but it is not yet ascertained that any pollen-tubes are produced.* When the pollen-grains are immersed in water, they speedily burst and discharge the fovilla from their sides. At fig. 5 (p. 625) is shown a longitudinal section of the pistillum, with one of the ovules at the base of the ovarium. It will be seen that the stigmatic surface is continued into the cavity of the ovarium, on that side which is most swollen.

In this plant the elastic valve of the anther fulfils an important function, which seems to have been overlooked. The stamen is not happily represented in Lindley's 'Introduction,' ed. 2, pl. 4, fig. 11. It is placed behind the filament, and is lower than the stigma; but the valve, on turning up, also twists round towards the stigma, its cavity being filled with nearly all the pollen, which is thus brought to a level with the stigma, ready to be applied to its surface the instant that the filament is excited below. W. WILSON.

Warrington, May 31, 1843.

ART. CLI. — *A History of the British Equiseta.* By EDWARD NEWMAN. (Continued from p. 594).

EQUISETUM PALUSTRE, VAR. NUDUM, (Gibson, MSS.)

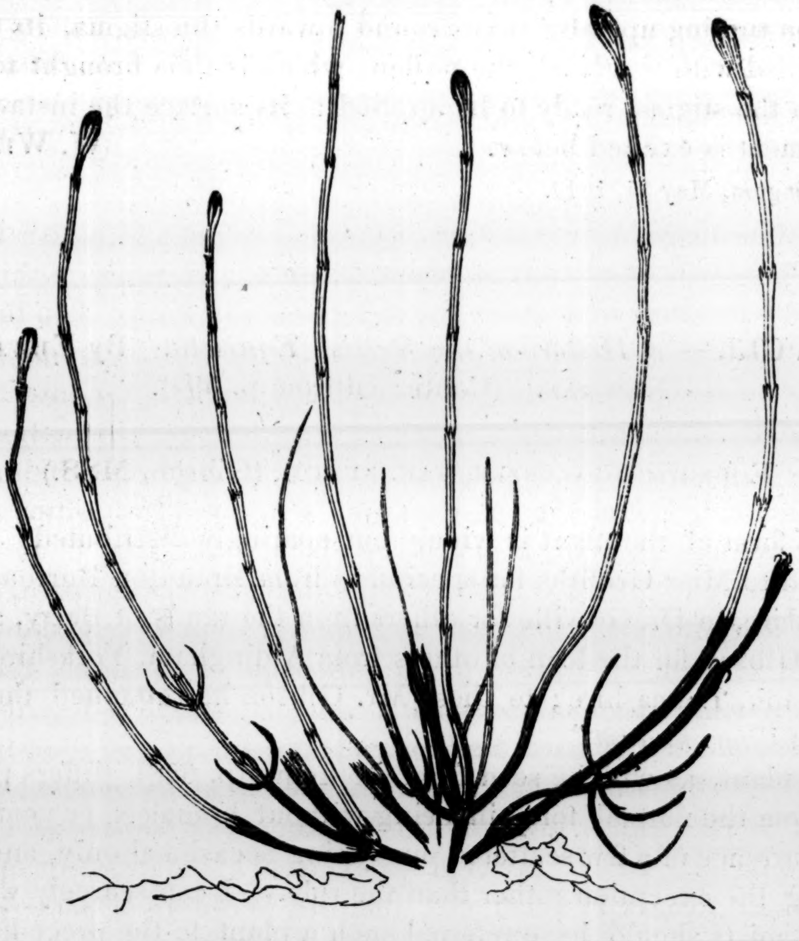
THIS form of the plant is widely but sparingly distributed. I am indebted to Miss Griffiths for specimens from Braunton Burroughs in Devonshire, to Dr. Greville for others from the sands of Barry, and to Mr. S. Gibson for the loan of others from Aldingham, Yorkshire, and Broadbank, Lancashire; to these Mr. Gibson has attached the MS. name of "var. *nudum*."

This plant, as will be seen from the figure (p. 628), differs principally from the normal form in being without branches, or nearly so, the occurrence of a few scattered ones being occasional only, and constituting the exception rather than the rule. I can scarcely wonder that botanists should have referred such a plant to the preceding rather than the present species: this is the case in all the herbaria I have examined, excepting Mr. Gibson's, which came into my hands just as the present paper was going to press, but in time to incorporate a notice of it, and adopt the proposed name.

---

* On further examination it appears that the pollen-grains do produce tubes; and that the stigmatic fluid is of a resinous nature, and does not mix with water.—*W. W June* 16, 1843.

The specimens vary considerably in size as well as general appearance: those from Scotland, Yorkshire and Lancashire are very small, the stems not attaining on the average more than a length of two inches: those from Devonshire are somewhat larger, the figure represents a Devonshire specimen of the natural size, and I have seen others of a still more luxuriant growth. Some of the examples are erect, others prostrate, and those which grow on sand-banks have the roots densely fibrous.



Equisetum palustre, var. *nudum*, Gibson, MS.

After a careful examination of this plant I am unable to find any characters whereby to distinguish it as a species from E. palustre:—the root, stem, sheaths and catkins seeming to me identical with those of the species to which I have referred it.

I cannot conclude my account of this species without thanking those botanists who have kindly given me their opinions on the nomenclature of the British species of Equisetum: the aggregate of these opinions is in favour of the changes I have proposed. I observe in Dr. Diedrich's 'Deutschlands Kryptogamische Gewaschse,' published since my notes on the Linnean herbarium, that the author has adopted the nomenclature given below.

E. limosum, Diedrich, = the polystachion variety of E. palustre, Linneus? A doubt may arise whether the polystachion variety of palustre, Linn., or fluviatile, Linn., be intended.
E. fluviatile, Diedrich, = E. fluviatile, Linn. and E. limosum, Sm.
E. Telmateja, Diedrich, = E. Telmateja, Ehrh., E. eburneum, Roth, and E. fluviatile, Smith.
E. umbrosum, Diedrich, = E. umbrosum, Meyer, and E. Drummondii, Hooker.

The other names correspond with those in Smith's 'English Flora.' As Dr. Diedrich makes no reference to my observations on this subject, and indeed could scarcely, by any possibility, have seen them, I think his publication may be received as further testimony in favour of the changes in question, and it certainly confirms my intention of adopting them, notwithstanding the expressed disapprobation of two eminent botanists, Mr. Watson (Phytol. 587), and Mr. Babington, (Manual, 379).* These gentlemen are themselves authorities in nomenclature, and their decisions are received with a respect to which mine are not entitled; I therefore use no judgment of my own, knowing that it would not be received as authority: but having shown the species described by Linneus under the name of fluviatile, that described by Ehrhart under the name Telmateja, and that described by Willdenow under the name umbrosum; and finding no descriptions prior to these since the establishment of the binominal nomenclature; I revert to the names given by these authors as *a matter of course*, not one in which I have any right to exercise a judgment or opinion of my own. I may however add, that Mr. Watson's remarks on the *habitats* of E. fluviatile, *Smith*, somewhat startle me: the inference to be drawn from half-a-dozen letters now before me, is, that the plant in question not only *does* not but *cannot* grow in water; but as none of these are intended for publication, I forbear naming the writers. In the confusion of names is it not possible that there is also a confusion of plants, and that Mr. Watson's fluviatile and my fluviatile are one and the same plant, and that we both adopt the Linnean nomenclature?

---

* Wahlenburg, in his 'Flora Lapponica' (1812), clearly points out Smith's error. —Fl. Lap. 298.

In my former observations I made no allusion to the Equisetum Drummondii of Sir W. J. Hooker, because no specimen of this plant exists in the Linnean herbarium, to which alone my remarks were confined: but the same species appears to have been long known as a native of Europe, by the name of *Equisetum umbrosum*. The name was for some time MS. only, and is given as Meyer's MS. name. However, in 1809, the species was regularly characterized by Willdenow, in his 'Enumeratio,' p. 1065; and again by the same author in his 'Species Plantarum' (1810), v. 3: and it also appears with a minute description in Vaucher's 'Monographie des Prêles,' published in the first volume of the 'Memoires de la Société de Physique &c. de Genève.' The description is accompanied by very exact figures of the fertile and barren fronds, and of a branched frond surmounted by a catkin, a very common but not constant form of the species.* In all these instances the name of umbrosum is given without any other synonyme, or any implied doubt as to its correctness.

EDWARD NEWMAN.

(To be continued).

ART. CLII.—*A Flora of the neighbourhood of Sandringham, Norfolk.*

By JAMES E. MOXON, Esq.

(Continued from p. 601).

Corylus Avellana. Hedges, frequent.
Fagus sylvatica. Hedges, occasionally.
Quercus Robur. Common.
Betula alba. Frequent.
Alnus glutinosa. Rather uncommon.
Urtica urens. Occasionally.
—— *dioica*. Plentiful.
Parietaria officinalis. Old walls, frequent.
Humulus Lupulus. Hedges, occasionally.
Ulmus campestris. Not frequent.
Myrica Gale. Dersingham and Rising heaths &c. abundant.
Salix argentea. Dersingham heath, local.
—— *repens, fusca, prostrata*. Heaths &c. common.
Salix cinerea, aquatica, oleifolia. Comn.
—— *caprea*. Wolferton wood, common.
—— *viminalis*. Frequent.
—— *alba*. Not uncommon.
Populus alba, tremula & *nigra*. Not unc.
Callitriche verna. Watery places, pools, &c. abundant.
Salicornia procumbens. Wolferton marsh, beyond sea-bank, occasionally.
—— *herbacea*. Ditto, abundant.
Atriplex portulacoides. Ditto, abundant.
—— *patula* and *angustifolia*. Waste ground, frequent.
—— *laciniata, littoralis*. Wolferton sea-bank, common.

---

* See Vaucher's Monographie, plate iv. figs. 1—4.

Chenopodium Bonus-Henricus. Dersingham common, not uncommon.

——— *album.* Abundant.

——— *maritimum.* Wolferton salt marsh, common.

Rumex obtusifolius. Abundant.

——— *sanguineus.* Ingoldsthorpe comn.

——— *Hydrolapathum.* Ditches, Rising common.

——— *Acetosa.* Meadows &c. frequent.

——— *Acetosella.* Dry places, common.

Polygonum amphibium. Ditches, Rising common.

——— *Persicaria, Lapathifolium.* Fr.

——— *Hydropiper.* Rather rare.

——— *Aviculare.* Abundant.

——— *Fagopyrum.* Fir-wood enclosure, Sandringham.

——— *Convolvulus.* Frequent.

Scleranthus annuus. Frequent.

——— *perennis.* Sandringham heath, near the church; Wolferton beach.

Erica Tetralix. Moist places, abundant.

——— *cinerea.* Dry heaths, very abundt.

Calluna vulgaris. Ditto.

Vaccinium Oxycoccos. Dersingham, Babingley and West Newton; Rising common &c., abundant.

Primula vulgaris. Rather uncommon.

——— *veris.* Not so frequent as the preceding.

Hottonia palustris. Ditches, Rising com.

Lysimachia vulgaris. Ditch-banks, Rising common.

Anagallis arvensis. Sandy fields, common.

——— *cærulea.* Cultivated fields at Sandringham, very rare.

——— *tenella.* Fens and watery hths. abundant.

Centunculus minimus. Rising common, local.

Glaux maritima. Wolferton salt-marsh, frequent.

Samolus Valerandi. Rising common, not unfrequent.

Ilex Aquifolium. Hedges, rare.

Cuscuta Epithymum. Dersingham and West Newton heaths, occasionally.

Convolvulus arvensis. Common.

——— *sepium.* Osier beds, hedges &c. frequent.

Campanula rotundifolia. Heaths &c. abt.

——— *Trachelium.* Castle Rising, also at Bawsey.

Jasione montana. Dersingham common.

Lonicera Periclymenum. Wds. and hedges frequent.

Sambucus nigra. Frequent.

Viburnum Opulus. Wolferton and Sedgford woods.

Sherardia arvensis Dersingham comn. fr.

Galium cruciatum. Wolferton, frequent.

——— *palustre.* Watery places, frequent.

——— *saxatile.* Heathy ground, abndt.

——— *uliginosum.* Watery places, comn.

——— *verum.* Heathy ground, ext. com.

——— *Mollugo.* Bushy heaths, occasly.

——— *Aparine.* Hedges, common.

Eupatorium cannabinum. Babingley, Snettisham &c. common.

Tussilago Farfara. Frequent.

Petasites vulgaris. Rising common, also at Sedgeford, of an immense size.

Aster Tripolium. Wolferton salt-marsh, common.

Erigeron acris. Shernbourne and Fring, sparingly.

Bellis perennis. Abndnt. almost everywh.

Solidago Virgaurea. Dersingham heath, abundant.

Inula dysenterica. Wolferton, Babingley, &c. common.

Anthemis Cotula. Common.

——— *arvensis.* Frequent.

Achillea Ptarmica. Common.

——— *Millefolium.* Abundant.

Matricaria Chamomilla. Frequent.

Pyrethrum Parthenium. Ditto.

Chrysanthemum Leucanthemum. Ditto.

——— *segetum.* Wolferton, not uncommon.

Artemisia maritima. Wolferton sea-bank, frequent.

——— *Absinthium* and *vulgaris.* Freq.

Gnaphalium uliginosum, minimum and *germanicum.* Common.

Senecio vulgaris. Very common.
——— *sylvaticus.* Near Sandringham chalk-pit, plentifully.
——— *Jacobæa.* Heaths, roadsides, &c. abundant.
——— *aquaticus.* Roydon fen, common.
Carlina vulgaris. Sandringham chalk pit, common.
Centaurea nigra. Very frequent.
——— *Cyanus.* Cornfields &c. freqt.
——— *Scabiosa.* Frequent.
Cnicus lanceolatus. Ditto.
——— *palustris.* Common.
——— *arvensis.* Abundant.
——— *pratensis.* Dersingham heath.
——— *acaulis.* Sandringham chalk-pit, plentifully.
Onopordum Acanthium. Near Sandringham chalk-pit, rather sparingly.
Carduus nutans and *acanthoides.* Comn.
——— *Marianus.* West Newton, 1838, a single plant.
Arctium Lappa. Common.
Lapsana communis. Ditto.
Cichorium Intybus. Castle Rising, &c fr.
Leontodon Taraxacum. Abundant.
Apargia hispida. Ditto.
——— *Taraxaci.* Sandringham chalk-pit, plentifully.
Tragopogon pratensis. Meadows &c. freq.
Picris hieracioides. Castle Rising; also at Reffley wood; not uncommon.
Crepis virens. Common.
Sonchus arvensis. Wolferton wood &c.
——— *oleraceus.* Very common.
Hieracium Pilosella. Sandy banks, very common.
Dipsacus sylvestris. Hedges, frequent.
Scabiosa succisa. Common.
——— *arvensis.* Roadsides &c. comn.
——— *columbaria.* Sandringham chalk-pit, 1842; Sedgeford.
Valeriana rubra. Walls of Sandringham park, not wild.
——— *dioica.* Back of Wade-moor wood, Sandringham.
——— *officinalis.* Reffley and Wolferton woods, plentiful.
Plantago major and *media.* Frequent.
——— *lanceolata.* Common.
——— *maritima.* Wolferton salt-marsh, common.
——— *Coronopus.* Sandringham, freq.
Statice Armeria. Wolferton salt-m. abdt.
——— *Limonium.* Ditto, common.
Echium vulgare. Sandringham, Dersingham, &c. very common. In 1838 this plant covered half an acre of ground in one locality, presenting to the eye a mass of the most vivid blue.
Lithospermum arvense. Fields near Sandringham chalk-pit, sparingly.
Myosotis palustris and *cæspitosa.* Comn.
——— *arvensis.* Sandy places, common.
Symphytum officinale. Common.
Cynoglossum officinale. Hedges &c. com.
Mentha hirsuta. Common.
Lycopus europæus. Ditto.
Salvia Verbenaca. Sandringham, West Newton &c. frequent.
Thymus Serpyllum. Very common.
——— *Acinos.* Frequent.
Prunella vulgaris. Very common.
Scutellaria galericulata. Common.
Nepeta Cataria. Hedges, frequent.
Glechoma hederacea. Common.
Lamium album. Common.
——— *purpureum.* Very common.
——— *amplexicaule.* Occasionally.
Galeobdolon luteum. Wolferton wood.
Galeopsis Tetrahit. Common.
——— *versicolor.* Wolferton heath.
Stachys sylvatica and *palustris.* Common.
Betonica officinalis. Frequent.
Marrubium vulgare. Sandringham, frequent; also at Hunstanton.
Ballota nigra. Common.
Teucrium Scorodonia. Heathy sandy places, very abundant.
Ajuga reptans. Moist shady places freqt.
Verbena officinalis. Dersingham common, very frequent.
Utricularia vulgaris. Ditches near the river, Rising common, abundant.
Pinguicula vulgaris. Wade moor; Dersingham & Ingoldsthorpe fens, co.

Orobanche minor. Clover-fields, Babingley common.

Verbascum Thapsus. Roadsides, old walls &c. frequent.

——— *nigrum.* Frequent.

——— *pulverulentum.* About Ingoldsthorpe and Snettisham, common.

Scrophularia nodosa and *aquatica.* Freqt.

Antirrhinum Cymbalaria. Occasionally.

——— *Linaria.* Frequent.

Digitalis purpurea. Occasionally.

Veronica Beccabunga. Common.

——— *Anagallis.* Wade moor.

——— *scutellata.* Babingley fen, abdt.

——— *officinalis.* Heaths, abundant.

——— *Chamædrys.* Heaths and shady places, abundant.

——— *serpyllifolia.* Frequent.

——— *montana.* Sandringham heath, occasionally.

——— *agrestis.* Cultivated ground, co.

——— *arvensis.* Walls of Sandringham church-yard &c. abundant.

——— *hederifolia.* Frequent.

Euphrasia officinalis. Very common.

Bartsia Odontites. Dersingham heath, co.

Pedicularis palustris. Dersingham and Roydon fens, common.

——— *sylvatica.* West Newton heath, frequent.

Rhinanthus Crista-galli. Frequent.

Solanum Dulcamara and *nigrum.* Freqnt.

Hyoscyamus niger. Roadsides: Dersingham, Sandringham, West Newton &c. occasionally.

Erythræa Centaurium. Sandy ground, frequent.

Menyanthes trifoliata. Dersingham and Roydon heaths, common.

Ligustrum vulgare. Hedges, frequent.

Fraxinus excelsior. Ditto, common.

Pinus sylvestris. West Newton heath, common, young plants, self-sown.

Galanthus nivalis. Sandringham park, abundant, covering about a quarter of an acre; if not wild, at least completely naturalized.

Iris Pseudacorus. Ditches &c. plentiful.

Orchis bifolia. Dersingham heath, Roydon fen, common.

——— *Morio.* Moist grassy places, com.

——— *latifolia.* Frequent.

——— *maculata.* Common.

Gymnadenia conopsea. Wade moor, 1842, abundant.

Epipactis palustris. Ditto, ditto.

Listera ovata. Ditto, common.

Allium ursinum. Wolferton wood, com.

Scilla nutans. Wolferton wood &c. abdnt.

Narthecium ossifragum. Fens; Dersingham, West Newton, &c. abundant.

Convallaria majalis. Wolferton wood, abt.

Ruscus aculeatus. Sandringham woods, not common.

Butomus umbellatus. Rising common, plentiful.

Sagittaria Sagittifolia. Ditto, common.

Alisma Plantago. Common.

——— *ranunculoides.* Dersingham, Ingoldsthorpe, Rising & Roydon fens, common.

Juncus conglomeratus, effusus, squarrosus, bufonius, lampocarpus. Common.

——— *maritimus.* Wolferton salt marshes, sparingly.

——— *uliginosus.* Frequent.

——— *acutiflorus.* Very common.

——— *obtusiflorus.* Ditches, Ingoldsthorpe common, abundantly.

Luzula pilosa. Wolferton wood, frequent.

——— *campestris.* Heaths, dry meadows and woods, abundantly.

——— *congesta.* W. Newton fen, sprngly.

Tamus communis. Hedges and woods, occasionally.

Arum maculatum. Common.

Typha latifolia. Ditches, ponds, &c. com.

Sparganium ramosum. Ditches, Rising common &c. common.

——— *simplex.* Ditches near the river, Rising common, abundantly.

Ruppia maritima. Ditches, Wolferton marsh, abundant.

Potamogeton natans. Fens, abundant.

——— *gramineum.* Ditches, Wolferton marsh and Rising common.

Triglochin palustre. Frequent.

——— *maritimum.* Wolferton salt-marsh, frequent.

Lemna minor. Pools, ditches &c. abndnt.

Phalaris arundinacea. Ditches &c. com.

Holcus lanatus. Meadows &c. very com.

Anthoxanthum odoratum. Pastures, com.

Alopecurus pratensis. Pastures, abundnt.

——— *geniculatus.* Moist mdows. co.

Phleum pratense. Pastures &c. abundant.

——— *arenarium.* Snettisham beach, co.

Agrostis Spica-venti. Cornfields, occas.

——— *canina.* Oakwood, West Newton fen.

——— *vulgaris.* Dry places, abundant everywhere.

——— *alba.* Oakwood, W. Newton fen.

Aira cristata. Walls of Sandringham churchyard.

——— *aquatica.* Frequent.

——— *cæspitosa.* Wolferton wood &c. co.

——— *præcox.* Common.

Avena fatua. Dersingham hth., sparingly.

——— *pratensis.* Pastures and bushy places, common.

——— *flavescens.* Pastures &c. common.

Hordeum murinum. Roadsides, frequent.

——— *maritimum.* Wolferton salt-marsh, common.

Lolium perenne. Meadows, pastures and seashore, abundant.

Triticum junceum. Snettisham, frequent, also at Hunstanton.

——— *repens.* Common.

Poa pratensis. Meadows, common.

— *annua.* Very abundant.

Briza media. Wade moor, Sandringham chalk-pit, plentiful.

Melica cærulea. Bogs, plentiful.

Glyceria aquatica. Ditches, common.

——— *fluitans.* Common.

——— *rigida.* Sandy ground, walls of Sandringham churchyard, common.

Glyceria procumbens. Snettisham beach, very common.

Triodia decumbens. Dersingham heath, frequent.

Dactylis glomerata. Common.

Cynosurus cristatus. Very common.

Festuca loliacea. Meadows &c. frequent.

——— *pratensis.* Common.

——— *elatior.* Sandringham chalk-pit, sparingly.

——— *sylvatica.* Hedges and woods, co.

Bromus mollis. Pastures &c. very comn.

——— *asper.* Hedges, occasionally.

——— *sterilis.* Fields and waysides, co.

Arundo Phragmites. Woods and watery places, abundant.

——— *Epigejos.* Oakwood, West Newton fen.

Eriophorum vaginatum. West Newton fen, rare.

——— *polystachion.* West Newton and Dersingham fens, occasionally.

——— *angustifolium.* Fens, very common.

Scirpus cæspitosus. Dersingham fen, freq.

——— *maritimus.* Wolferton salt-marshes &c., abundant.

——— *setaceus.* Rising common, locally.

——— *glaucus.* Wolferton salt-marshes, sparingly.

Eleocharis palustris. Not common.

Rhynchospora alba. Dersingham fen, co.

Schœnus nigricans. Ditto, ditto.

Carex remota. Ditch-banks, Dersingham, occasionally.

——— *arenaria.* Near Sandringham chalk-pit, abundantly.

——— *pilulifera.* Rising common, freqnt.

——— *flava.* Frequent.

——— *præcox, panicea* and *riparia.* Common.

——— *ampullacea.* West Newton fen, Rising common, frequent.

I must here remark, that owing to want of opportunity, the genera Salix and Carex have not been so fully investigated as might be wished.

Species collected beyond the limits of the above Flora.

Nuphar lutea. Ditches between Lynn and Downham, common.

Sanicula europæa. Reffley wood, near Lynn.

Eryngium maritimum. Hunstanton sea-shore.

Sium latifolium. Ditches, marsh-land, abundant.

Œnanthe Phellandrium. Ditto, ditto.

Smyrnium Olusatrum. Lanes and hedges at Hunstanton, frequent.

Meum Fœniculum. Hunstanton, Sedgeford &c. common.

Hippuris vulgaris. River Nar, back of the Priory, Castle Acre, common.

Cheiranthus fruticulosus. Ruins of Castle Acre Priory, abundant.

Cakile maritima. Hunstanton sea-shore, common.

Helianthemum vulgare. Hunstanton chalk cliffs.

Althæa officinalis. Ditch banks, marsh land near the sea.

Arenaria peploides. Hunstanton sea-shore, common.

Rosa arvensis. Hedges nr. Sutton bridge, frequent.

Sedum reflexum. Walls at Castle Acre, common.

Sempervivum tectorum. Cottage roofs nr. Wisbeach, frequent.

Fagus Castanea. Hedges near Liteham.

Saponaria officinalis. Wet hedges at Pentney, near Gayton, sparingly.

Salsola Kali. Hunstanton sea-shore, co.

Daphne Laureola. Sedgeford wood.

Polygonum acetosum. Sutton bridge, sparingly.

——— *maritimum.* Hunstanton sea-shore, local.

Convolvulus Soldanella. Ditto, ditto.

Apargia hirta. Sutton bridge, frequent.

Origanum vulgare. Chalky banks, comn.

Thymus Calamintha. Castle hill, Castle Acre, abundant.

——— *Nepeta.* Chalky banks, Sedgeford, near Snettisham, not uncomn.

Atropa Belladonna. Field-banks at Reffley wood, near Lynn, occasionally.

Erythræa pulchella. Sutton bridge, comn.

Villarsia nymphæoides. River and ditches between Lynn and Downham, com.

Vinca minor. Sedgeford.

Typha angustifolia. Sedgeford wood, com.

Poa compressa. Walls of Castle Acre Priory, &c. common.

Arundo arenaria. Sea-sh. Hunstanton, co.

Elymus arenarius. Ditto, frequent.

JAMES E. MOXON.

Leyton, Essex, December, 15, 1842.

ART. CLIII. — *Notice of Books relating to British Botany.*

1. *The British Flora: in Two Volumes. Vol. I., containing the Phænogamous or Flowering Plants and the Ferns.* By SIR WILLIAM JACKSON HOOKER, K.H., LL.D., F.A.S. & L.S., ETC. ETC. *The Fifth Edition, with Additions and Corrections, and numerous Figures illustrative of the Umbelliferous Plants, the Composite Plants, the Grasses and the Ferns.* London: Longman & Co. 1842. 8vo.
2. *The Geographical Distribution of British Plants.* By HEWETT COTTRELL WATSON. *Third Edition, Part 1.* London: printed for the Author. 1843. 8vo.

3. *Manual of British Botany, containing the Flowering Plants and Ferns, arranged according to the Natural Orders.* By Charles C. Babington, M.A., F.L.S., F.G.S., etc, etc. London: Van Voorst. 1843. 12mo.

In our last number we briefly mentioned the appearance of two of the works whose titles stand at the head of this article: in the present notice we believe we cannot do better than combine with these a third, and to class them all under one general head; since the geographical distribution of plants and their correct discrimination are branches of botanical science as inseparable as they are important and interesting. A botanist is always anxious to ascertain not only the name of a plant and its place in the system; he also wishes to make himself acquainted with its native country, its general geographical range, and every circumstance connected with its habitats and localities, together with the various conditions of climate and altitude under which it occurs. Such information relative to our native species will be conveyed in Mr. Watson's treatise on 'The Geographical Distribution of British Plants,' of which the first part, containing the Ranunculaceæ, Nymphæaceæ and Papaveraceæ, is now before us. The author has been for many years engaged on this subject; the two treatises previously printed by him having been but the precursors of the present admirable work, wherein his views are more fully developed, and the results of his researches stated in a more extended form. Its scope and design will be best shown by extracts from the "Preliminary Explanations."

> "The first object to be accomplished in the following pages, is that of bringing together, under a methodical form, those facts which are calculated to assist in showing both the general range and local habitats of such plants as are reputedly indigenous, or pretty well naturalised, in the island of Great Britain and its islets immediately adjacent, from Scilly to Shetland."—p. 2.

The plants of Ireland are necessarily excluded, there not being on record sufficient data to enable the author to illustrate the geographical relations of the flora of that country. The Channel Isles are in like manner excluded, because they are considered to belong more properly to France than to this country: "all their indigenous plants being apparently common to those islets with France, while several of them are unknown among the native plants of England."

> "After bringing together such data as may be found conveniently within the author's reach, for exhibiting the ascertained distribution of each species considered by itself, it will then become comparatively easy to add illustrative maps, statistical tables, and more comprehensive and generalised views respecting those various physical conditions which are apparently most influential in determining the present distribution

> of the plants. To this end, it is unquestionable that copious and accurate details are necessary in the first place, and before the aid of maps and tables can be called in for the sake of explicitness and precision in conveying to others the knowledge so acquired. Interesting as it may be in itself to many minds, the public value of that knowledge must be measured by the degree in which it can tend to elucidate the causes of vegetable distribution; since it is only by first ascertaining those causes that we can reasonably expect to render the knowledge beneficially applicable to human affairs. But much time may yet elapse before any such application of knowledge can be made.
>
> "Notwithstanding the long-accumulated stores of individual facts relating to the indigenous plants of this country, and to the particular localities for the rarer species, as well as many full lists of the plants of single counties or other definite tracts; and notwithstanding the lively impulse which has of late years been given to such enquiries, we are still sadly short of accurately observed facts that bear directly upon the ultimate object here proposed. The facts not having been observed or recorded with reference to any such end, they have consequently been, so far as that end is concerned, too often only inadequately observed and recorded; the most valuable or interesting circumstances having been either noticed insufficiently or wholly passed over."—p. 3.

We regret that we cannot follow the author into all the details of the plan of the work, which, however, we trust will be rendered intelligible by such brief explanatory remarks as our limits will allow us to give. First as to the botanical arrangement:—

> "The so-called Natural System of arranging plants determines the order in which they will be spoken of in these volumes, and which will be very nearly that of Decandolle's Prodromus. Nature's own system of practical arrangement is clearly a geographical one; but for the convenience of technical botanists, it has been deemed more advisable to follow the abstract system, by which plants are supposed to be united into groups according to general resemblances."—p. 5.

The nomenclature is that of Hooker's 'British Flora,' fifth edition, with occasional references for synonyms to the works of Smith, Gray, Withering and Hudson. "No species will be introduced into this work as indigenous, unless the author has seen specimens alleged to be of British growth." As examples of "the difficulty of tracing any abrupt line of separation between the two classes of native and naturalised plants," the six following trees are mentioned;—the birch, the beech, lime, sycamore, chesnut and walnut: the first of these being "truly indigenous," and the last "certainly introduced." The author asks, "between which two, among the remaining four intermediately placed names, must we draw the line that divides the naturalised from the native species?"—and remarks that it would be difficult to obtain a unanimous decision on this question: the difficulty would consequently be greater in the case of the common plants of our gardens, corn-fields, road-sides and sea-shores.

At the head of each species are two diagrams; one being "a miniature map of Britain, divided into eighteen districts," whih are numbered in regular order from south to north; the other exhibits "the absolute and comparative heights attained by the highest hills of the respective districts." By the omission of the figures from the spaces in the first diagram corresponding with districts in which the species has not been observed, a pretty exact idea of its ascertained range is given; the same course is pursued in the diagram of altitudes. These diagrams are intended as index-maps to others on a larger scale.

Immediately under these diagrams are the following details. 1. The name of the species, with synonyms, if any. 2. An enumeration of the districts in which the species has been ascertained to grow. 3. An enumeration of such of twenty local Floras and thirty catalogues in which the species is mentioned. 4. Enumeration of localities from which specimens of the species are preserved in the author's herbarium. 5. Uncertain localities. 6. Distribution of the species in Britain. 7. General distribution. 8. Localities ranged under the various districts, collected from different sources.

We regret exceedingly that we cannot give copious extracts from the author's highly interesting remarks on the general distribution of the plants belonging to the three natural orders treated on in the present part: but with two more quotations we must conclude.

> "Ranunculaceous plants are very widely distributed over the surface of the globe. They were found—in the typical form of the order, the genus Ranunculus—on all the arctic and polar coasts visited by Sir Edward Parry and other northern voyagers; even under the highest latitudes attained, as in Melville Island and at the northern extremity of Spitzbergen. They are still to be seen at the contrary extremes both of the old and new worlds, about the Cape of Good Hope and the Straits of Magellan; and they have also been gathered on the islands of the Southern Pacific, in New Holland, Van Dieman's Land, New Zealand, &c. Between these remote positions representatives of the order may be found in every part of the world, numerously in cold and temperate climates, but much more sparingly scattered over intertropical countries. Within and about the tropics, the plants of this order are chiefly seen on the mountains, although not invariably so."—p. 22.

In Steudel's Nomenclator are enumerated about 78,000 species of phanerogamous plants; of these 830 species, or about a 94th part of the whole number, are Ranunculaceæ. Mr. Watson thinks that this proportion may possibly be too high, in consequence of "the species of this order being better known than are those of several other orders prevalent within the tropics, or in the southern hemisphere." The proportion relatively to other flowering plants, is highest in high northern latitudes, but the greatest absolute number of species is found in the more temperate latitudes of the northern hemisphere. In

Britain the Ranunculaceæ constitute about a 48th part of the whole phanerogamic flora.

"The beautiful plants which are included by systematic botanists under the order of Nymphæaceous plants, and are sufficiently familiar to most persons under their common name of Water-lilies, are distributed less generally over the world than the former order, that of Ranunculaceous plants, or than the succeeding one, consisting of the Poppies, and allied genera. Yet, looking to the small number of distinct species comprehended in it, the present order may still be said to have a wide distribution. Being mostly large aquatic plants, adapted to grow in lakes and the less rapid rivers, the species of Nymphæaceæ are the ornaments of continental countries and low places; and are usually banished from islands and elevated mountains, as well as from very cold latitudes whose waters remain frozen during a large part of the year. Hilly or undulated countries, however, whose streams are converted into lakes or lake-like rivers on their low plains and in their valleys, may be considered favourable for the support of water-lilies; and we consequently find that our own insular position does not prevent Nymphæaceæ constituting quite as large a proportion of the indigenous flora of Britain, as is ordinarily the case with the floras of continental countries."—p. 174.

We have stated that this work is printed for private distribution only; it will appear from time to time as the materials may become ready, and is offered to those botanical friends who have assisted the author in his investigations on that department of botanical science to which it relates. The author has adopted this course from an unwillingness to give such a pledge for the completion of the whole, as would be implied by the publication of a part, of a work which must necessarily run to so voluminous an extent. Whilst we cannot but respect the honourable feeling which prompted this course, and admire the liberality with which it has been carried out, we must also regret that such a store of valuable information on this exceedingly interesting branch of the science, should not be rendered accessible to every student of the Botany of this country.

Let us now proceed to make a few observations on the two other publications the titles of which we have given above. We have but little doubt that on the first announcement of Mr. Babington's intention to add another to the numerous works on British Botany already existing, there was a feeling in the minds of many botanists that such an addition to their libraries was not required, or, at least, that so much having been effected in advancing our knowledge of British plants, a new Flora must necessarily be no more than a compilation. But that a new Flora was not uncalled for at the present time, and that it was not impossible for such a work to be something more than a mere compilation, will, we trust, be rendered evident by a hasty glance at the previously published general Floras of this country; commencing with the *magnum opus* of Sir J. E. Smith, in 1828.*

Although arranged according to what it has lately been the fashion to disparage by the appellation of an antiquated and useless system, the 'English Flora' will never be superseded as a work of standard authority on the botanical productions of Great Britain. Whatever may be its faults, they are doubtless attributable to the state of Botany in England at the period when it was written, and are infinitely outnumbered by its merits, which are its own, and have been justly acknowledged by all subsequent writers on Botany. The appearance of a work of such high authority, in the English language, gave a new impulse to the study of British plants, and laid the foundation for the more exact discrimination of our native species; unfortunately, however, its bulk and consequent price placed it beyond the reach of many a humble but ardent student, who was obliged to rest content with the more accessible and more portable 'Compendium Floræ Britannicæ,' if he understood Latin — or with Galpine's 'Synoptical Compend,' Macgillivray's Withering, or the 'Compendium of the English Flora,' if his literary acquirements extended only to the English language. All these were exceedingly useful books, to the travelling botanist more especially; but the three of the highest authority — the Compendiums — laid claim to little more than the merit of being correct indexes to the larger works. In 1830 appeared the first edition of Hooker's 'British Flora,' intended, as the author says in the preface, "1stly, to provide the young student with a description of our native plants, arranged according to the simplest method; and 2dly, to afford to the more experienced botanist, a manual, that should be useful in the field as well as the closet." The first object was gained by the adoption of the Linnæan method; the second, by happily steering a middle course between the two extremes of devoting so much space to the descriptions and synonyms as would increase the bulk of the book, or so curtailing the characters that they would scarcely be available for specific discrimination by the majority of those for whose use the work was intended. That the idea was a happy one, and on the whole well worked out, can scarcely be doubted, when we consider that within about ten years from its first appearance, four large editions of the 'British Flora' in its original form have been disposed of; but we must confess that we do greatly doubt both the policy and the expediency of the recent change in the arrangement of the work, unaccompanied by corresponding improvements in the matter, of which more anon.

---

* The first volume of Smith's 'English Flora' was published in 1824, but the work was not completed until 1828, when the fourth volume appeared, accompanied by a reprint of the preceding three volumes.

In addition to the works above named, which are all arranged according to the Linnæan system, and have all gone through several editions, we may here mention two others, in the arrangement of which the natural system was followed; we allude to Lindley's Synopsis and Macreight's Manual. All these different publications have, however, more or less the air of compilations; their respective authors or editors having probably supposed that as so much had already been effected in British Botany, nothing more was required, than perhaps just to register any new species or variety that might by chance offer itself to their notice; such an event as the appearance of an *original* British Flora being deemed beyond the bounds of possibility. The publication of Leighton's 'Flora of Shropshire' we believe to have had some effect in dispelling this illusion; at all events it would naturally lead to the reflection, that if in the Flora of a single county so many improvements could be effected by the exercise of a little original observation, it were not unreasonable to suppose that a patient and careful investigation of the general Flora of the kingdom, would yield a rich and abundant reward to the botanist who should undertake the task.

The state of botanical science in Britain, at the period when Mr. Babington first commenced his investigation of our Flora, and its probable causes, are thus described in the Preface to that gentleman's Manual.

> "From the attention which has long been paid to the elucidation of the Flora of Britain, and the numerous excellent botanists who have, since the time of the justly celebrated Ray (not to go further back), employed their talents upon an endeavour to determine the indigenous products of these kingdoms, the author, in common it is believed with most English botanists, did not suppose that much remained to be done in British Botany; for he could not expect that after the labours of such men as Smith, Hooker, Lindley, and others, and the publication of so invaluable and unrivalled a collection of figures as is contained in the 'English Botany,' there could still be many questions concerning the nomenclature, or any considerable number of unascertained species, the determination of which would fall to his lot. He had not however advanced far in the critical examination of our native plants, before he found that a careful comparison of indigenous specimens with the works of eminent continental authors, and with plants obtained from other parts of Europe, must necesssrily be made, for it appeared that in very many cases the nomenclature employed in England was different from that used in other countries, that often plants considered as varieties here were held to be distinct species abroad, that several of our species were only looked upon as varieties by them, and also that the mode of grouping into genera was frequently essentially different.

> "The discovery of these facts produced considerable astonishment, and the author was led to consider what could have been the causes of so remarkable a discrepancy. The following appears to be the most probable explanation. It is well known that at the close of the last century Sir J. E. Smith became the fortunate possessor of the herbarium of Linnæus, and was thus enabled to ascertain, with very considerable accuracy, the British species which were known to that distinguished man, and to publish, in the most improved form that he had given to his system, a remarkably complete and excellent Flora of Britain. Then followed the long-continued separation of this country from France, and indeed from most of the European nations, by which we were almost completely prevented from observing the progress which botanical science was making in other countries, and at the same time our own flora was continually receiving accessions of new plants which it was nearly impossible to identify with the species detected and published in France and Germany. At the conclusion of the war we had become so wedded to the system of Linnæus, and it may even perhaps be allowable to add, so well satisfied with our own proficiency, that, with the honourable exception of Mr. Brown, there was at that time scarcely a botanist in Britain who took any interest or paid the least attention to the classification by Natural Orders which had been adopted in France, and to the more minute and accurate examination of plants which was caused by the employment of that philosophical arrangement. Let it not however be supposed that the author wishes at all to detract from the value of the Linnæan system—a system which was considered by its author as merely a provisional arrangement or kind of index to the known plants; for no botanist has more strongly stated the value of a natural classification than Linnæus himself,—as he fully believes that without some such artificial scheme by which newly discovered plants could be catalogued for easy reference, the multitudinous species which distant countries have supplied would long since have formed so enormous and confused a mass as to have reduced Botany to a state little better than that into which it had fallen at the commencement of the Linnæan era.
>
> "The publication of so complete and valuable a Linnæan work as the 'English Flora,' greatly contributed to the permanency of this feeling, and accordingly we find that at a very recent period working English botanists were unacquainted with any of the more modern continental floras, and indeed even now many of those works are only known by name to the great mass of the cultivators of British Botany."—*Pref.* v.

It now remains for us briefly to enquire which of the two works before us is the most likely to have the effect of enabling the student of British Botany to take his stand by the side of the continental cultivators of the science, or at least to enable him to make some steps in advance of his present position. And here we feel that we are treading on dangerous ground; we feel that whatever is stamped with the authority belonging to so illustrious a name as that of the author of the well-known and widely circulated 'British Flora,' must be approached with caution, nay, almost with reverence; and that no rude hands ought to be laid on the structure he has raised. We should however be wanting in our duty as honest chroniclers, did we not state it to be our opinion, and we state it with regret, that the fifth edition of the 'British Flora' is neither calculated to extend the fame of its author, nor in any considerable degree to raise the standard of botanical excellence in this country; it even, in many points, falls short of the actual state of knowledge of our native plants, existing in Britain at the period of its publication.

We believe that the numerous avocations of the author have been urged, even by his reviewers, in extenuation of sundry little blemishes, which those fond of such employment might hunt out in the former editions of the 'British Flora.' Such a plea, to a certain extent, we are quite willing to admit; at the same time we contend, that in the preparation of a new edition of a popular and really useful work, the public, who have so warmly patronized the earlier editions, have a right to expect that a little more care should be taken than appears to have been bestowed on this same fifth edition of the 'British Flora,' and certainly a little more regard for the researches of fellow-labourers would not have been altogether out of place. For instance; — if, instead of simply quoting the Edinburgh Catalogue as a mere list of synonyms, not worth the trouble of investigating, Sir William had been led by his doubts to a re-examination of the works of the continental authors whose nomenclature is there adopted, and had then thought it necessary to reject that nomenclature, — his reasons for doing so would have been heard with deference and respect. Again; as one example of Sir William's disregard of the labours of British botanists, may be mentioned the long-mooted question respecting the parasitism of Monotropa; which, in the period between the publication of the fourth and fifth editions of the 'British Flora,' was fully investigated and satisfactorily decided; yet we here find repeated the same words—"Root fibrous, parasitic ?"—which have appeared in all the former editions of that work. Nor is any allusion made to another form of Monotropa, now found to be common in England, and apparently so distinct from Hypopitys, as to have been raised to the rank of a species by many botanists. A little more care would also have led to the detection and correction of numerous erroneous references to 'English Botany,' which have been perpetuated from first to last: like the old nomenclature for the ferns and their allies, which is retained with scarcely a single change. The book is, in fact, little more than the fourth edition newly arranged, that is, the natural system is followed instead of the Linnæan in the body of the work, with a Linnæan synopsis of genera prefixed: the preface even has not been rewritten in justification of this change of plan; a few sentences having been grafted on the old stock in reference to the use of the Linnæan synopsis. We regret to have found occasion for this ungracious task of fault-finding, because we believe that Sir William could have done much better.

We will now turn to Mr. Babington's Manual, and see how nearly that comes up to the idea of what a new book on British Botany ought to be. The model chiefly followed in its preparation is Koch's 'Synopsis Floræ Germanicæ;' but other standard works have also been consulted.

> "In the present work it has been the author's endeavour to adopt, in all cases, those names which have the claim of priority, unless good cause could be shown for a contrary proceeding, and with this object he has carefully examined nearly all the best European Floras, comparing our plants with the descriptions contained in them, and in very many cases with foreign specimens of undoubted authenticity. In the adoption of genera and species an endeavour has been made, by the examination of the plants themselves, to determine what are to be considered as truly distinct, thus, it is hoped, taking Nature as a guide, and not depending upon the authority of any name, however distinguished. Still let it not be supposed that any claim is made to peculiar accuracy, nor that the author considers himself qualified to dictate to any student of Botany, for he is well aware that there are many points upon which persons who have carefully studied the subject may form different conclusions from those to which he has been led."—Pref. vi.

This is as it should be; and such, doubtless, was the plan adopted, so far as circumstances would permit, by Sir J. E. Smith, and by the author of the 'British Flora' himself, in the preparation of the early editions of that work: there is, nevertheless, a greater amount of originality observable in the pages of the Manual, than in any general work on British Botany that has issued from the press since the publication of the 'English Flora.' In a very few instances Mr. Babington has thought it better to rely more on the labours of his predecessors than on his own judgment, as in the difficult genera Rosa and Rubus, respecting which he expresses his obligations to the valuable monographs by Mr. Borrer, published in the 'British Flora.' But, while studying the works of the great continental botanists, the author has not deemed it unnecessary to note what has been going on at home, and that, too, up to the latest possible date previous to the publication of his Manual; which is thus rendered more complete than it would otherwise have been. The orders and genera are necessarily defined as concisely as was consistent with perspicuity; but we should like to see, in a future edition, a general table of the orders and genera, arranged on the dichotomous or some other plan, prefixed to the volume, as well as the present Linnæan synopsis.

We must conclude with the following paragraph, which conveys the author's wishes respecting a future edition of his Manual.

"It is hoped that those who use this book will favour the author with information of any (even the slightest) addition, correction or alteration that may appear to be necessary, in order that it may be employed in the preparation of a future edition, as it is only through such assistance that the Flora of an extensive country can attain to even a moderate degree of perfection."—Pref. viii.

We think that the cause of British Botany could scarcely be better served than by the extensive circulation of this work, especially if its possessors are not sparing of either their criticism or their labour, the one in discovering and pointing out to the author any errors into which he may have fallen—the other in furnishing him with additional materials, the stock of which is as yet far from being exhausted.

ART. CLIV.—*Varieties.*

323. *List of Mosses found near Manchester.* I have pleasure in sending you the following list of mosses, growing within fifteen miles of Manchester. That it is by no means perfect I am willing to allow, as I have intentionally omitted several species recorded as growing in this neighbourhood, either on account of their exact localities not being given, or from the authority being sometimes questionable.

Andræa alpina. Hills above Staley bridge

——— *Rothii.* Plentiful at Greenfield, Saddleworth.

Phascum serratum. Near Dukinfield, on hedge banks.

——— *alternifolium.* Hedge-banks on the Hyde road.

——— *subulatum.* Very common.

——— *axillare.* Found occasionally in various places.

——— *patens.* Road-side, near Baguley Smithy.

——— *muticum.* Hobson found this species plentifully near Blakeley, but it has not been met with lately.

Sphagnum obtusifolium and *acutifolium.* Common in all the bogs in this neighbourhood.

——— *squarrosum.* In boggy pits.

——— *cuspidatum.* Pits near Ashton moss.

Gymnostomum truncatulum. Very common, and var. β. equally common.

——— *fasciculare.* Greenfield &c.

——— *pyriforme.* Walls nr Hyde.

Anictangium ciliatum. Hills above Staley bridge.

Diphyscium foliosum. Greenfield and its neighbourhood.

Tetraphis pellucida. Bredbury wood and Blakeley clough.

Sphachnum sphæricum and *mnioides.* Common on all the bogs.

——— *ampullaceum.* Clifton moss.

Weissia nuda. Lower Broughton and Blakeley.

——— *curvirostra.* Common on walls and rocks

——— *recurvata.* Ashworth wood, near Heywood.

——— *lanceolata.* Hedge banks, near Openshaw.

——— *controversa.* Walls & rocks, com.

——— *cirrhata.* Marple, common.

——— *crispula.* Shawforth moor, near Rochdale.

——— *trichodes.* On stones at Greenfield.

Grimmia apocarpa. On stones in the river Tame, near Staley, and at Marple.

Grimmia pulvinata. Walls & rocks, com.
—— *Doniana.* Rowley moor, near Rochdale.
Didymodon purpureus. Marple.
—— *heteromallus.* Not uncommon.
—— *flexifolius.* Greenfield.
Trichostomum lanuginosum. Common on the hills near Mottram &c.
—— *canescens.* Greenfield.
—— *aciculare.* Greenfield, and near Rochdale.
Dicranum bryoides. Very common.
—— *taxifolium.* Ditto.
—— *adiantoides.* Bredbury wood and Blakeley.
—— *glaucum.* Baguley moor, and beyond Staley bridge.
—— *squarrosum.* Cotterill and Marple cloughs.
—— *scoparium.* Common.
—— *flexuosum.* Chat moss, and near Tildsley.
—— *varium.* Not uncommon.
—— *heteromallum.* Very common.
Tortula muralis and *ruralis.* Common.
—— *subulata.* Near Dunham &c.
—— *fallax.* Common.
Cinclidotus fontinaloides. Marple.
Polytrichum undulatum. Very common.
—— *piliferum.* Common near Mottram, and other places.
—— *juniperinum.* Dunham park.
—— *commune.* Baguley moor &c. very common.
—— *aloides.* Common.
—— *nanum.* Blakeley &c.
Funaria hygrometrica. Very common.
Orthotrichum pulchellum. On walls in Marple wood.
—— *anomalum.* Cotterill clough.
—— *diaphanum.* Dunham park.
—— *striatum.* Moors beyond Staley.
Bryum julaceum. Banks of the Irwell, near Clifton aqueduct.
—— *carneum.* Hills above Staley bridge.
—— *elongatum.* Greenfield.
Bryum argenteum. Common.
—— *pyriforme.* I found a specimen or two near Mottram, but cannot tell the precise locality.
—— *turbinatum.* Hills above Staley bridge.
—— *capillare.* Marple aqueduct, &c. common.
—— *cæspititum* and *natans.* Common.
—— *palustre.* Chat moss.
—— *roseum.* Cotterill clough, &c.
—— *ligulatum*, *hornum* and *punctatum.* Common.
—— *rostratum.* Tatton park.
Bartramia pomiformis. Chorlton fields, &c.
—— *fontana.* Baguley moor.
—— *arcuata.* Alderley, and near Staley bridge.
Neckera pumila. Cotterill clough, rare.
—— *crispa.* Marple, &c.
Anomodon curtipendulum. On stones at Greenfield, &c.
Daltonia heteromalla. Tatton park.
Fontinalis antipyretica. Pits near Gorton, Baguley moor.
—— *squamosa.* Marple, &c., com.
Hookeria lucens. Cotterill clough, and Mere clough.
Hypnum trichomanoides & *complanatum.* Cotterill & Marple cloughs, Hough-end, &c.
—— *riparium.* Bredbury wood, Hough-end, &c., common.
—— *undulatum.* Near Staley bridge, common.
—— *serpens* and *purum.* Very com.
—— *Schreberi.* Near Clifton aqueduct, and Marple.
—— *sericeum.* Hough-end hall.
—— *salebrosum.* Cotterill clough, ra.
—— *alopecurum.* Cotterill & Marple.
—— *dendroides.* Reddish vale.
—— *curvatum* and *myosuroides.* Cotterill clough.
—— *splendens.* Common in woods.
—— *proliferum.* Common, bearing fruit in Cotterill clough.
—— *prælongum.* Common.

Hypnum flagellare. Greenfield, but not in fructification.
—— *piliferum*. Cotterill clough.
—— *rutabulum*. Very common.
—— *velutinum*. Near the river Tame at Arden, and near Hyde.
—— *albicans*. Chorlton fields.
—— *ruscifolium*. Common in brooks.
—— *confertum*. Bredbury wood and other places, common.
—— *cordifolium*. Pits near Reddish.
—— *triquetrum*. Very common.
—— *loreum*. Greenfield.
Hypnum brevirostre. Not uncommon.
—— *filicinum*. About Marple &c. common.
—— *aduncum*. Baguley moor, and near Bowdon.
—— *uncinatum*. Marple aqueduct.
—— *commutatum*. Bredbury wood &c. common.
—— *cupressiforme*. Several very curious varieties are found in Bredbury wood, Cheshire.
—— *molluscum*. Near Marple, very common.

—*Joseph Sidebotham; Manchester, March* 16, 1843.

324. *On the arrangement of a Herbarium*. Imagining that the plan I pursue in the arrangement of my herbarium is in some respects superior to that of Mr. King (Phytol. 585), I am induced to forward a short detail of it, in the hope that it may contain hints which may be of service to some of your readers. I ought to say, that although I have varied some of the details, I adopted the principle of the plan from seeing it carried out in the herbarium of a friend, which contained an extensive collection of both British and foreign species, kept in beautiful order. *Specimens*.—My specimens are fastened on sheets of folio post paper, of good texture, size 15¼ inches by 9½. The specimens are fastened with gum Arabic on the inner right hand page of each sheet; and on the opposite one I write the name, order, and other particulars: I also write the botanical name at the top of the outside of the sheet. Before placing each species in its appropriate place in the herbarium, I wash it lightly over with a solution of corrosive sublimate in spirits of wine or spirits of turpentine, in the proportion of 60 grains of the former to 8 fluid ounces of either of the latter. *Arrangement*.—I arrange my specimens on the natural system; and for this purpose I have wrappers, each of half a sheet of double crown paper folded: on the outside of which is written the name of one of the natural orders; in this I place all the sheets of specimens belonging to that order. In the orders Rosaceæ, Compositæ, Gramineæ, and one or two others, it may be as well to subdivide each into two or three portions, and use a separate wrapper for each. The wrappers, with their contents, are placed in wooden boxes, made after the fashion of a music-case, namely, with a lid at the top, and the front hinged so as to fall down on a level with the bottom. I have these boxes made of the size of my paper, and 6½ inches deep, which accommodates about 300 species in each case. As an index I

use the Edinburgh Society's Catalogue, affixing an asterisk in red ink to the name of each species in the herbarium. In this way the collection may be kept in beautiful order, and at all times in a state of readiness for convenient reference. — *Wm. L. Notcutt; Fareham, June* 2, 1843.

325. *Friendly Hint to Subscribers.* I am very sorry to perceive, from the cover to 'The Phytologist' for June, that its circulation does not pay its expenses. Might I presume to suggest, that if each subscriber would endeavour to obtain, among his botanical friends, one additional subscriber, it would relieve the magazine from its difficulties, and continue to us a periodical which has hitherto been very interesting and useful, and which will, I trust, long maintain its standing.—*Id.*

326. *Note on Veronica Buxbaumii and V. triphyllos.* I enclose a specimen of Veronica Buxbaumii, and also one of V. triphyllos, both of which have been discovered this spring within two miles of York, the former in a clover field, the latter on a sandy bank. I observe that V. triphyllos is mentioned by Sir W. J. Hooker as being found in Yorkshire, though accompanied with a query. — *Silvanus Thompson; Friends' School, York, 6th Month* 5, 1843.

327. *Note on the Habitats of Equisetum fluviatile*, Sm. I went the other day, with my friend Mr. Sparkes, to Norwood, and minutely examined the station where I found Equisetum fluviatile last summer. After reading the discordant statements which have lately appeared in 'The Phytologist' respecting the habits of this plant, we felt a desire to prove whether any specimens of it would be found actually *in* the water. It was growing most plentifully on the steep bank alluded to by me in the August number (Phytol. 295), but much more sparingly on the small piece of wet ground between that and the pond; yet a few stems were found close to the water's edge. There was not, however, a single specimen that actually grew *in* the water. It is worthy of remark, too, that by far the most luxuriant specimens were those which grew on the bank; those about the pond being much more stunted in appearance. All the authorities within my reach assign a station for Equisetum fluviatile near rivers and lakes; but none speak of it as actually growing *in* water. I send you a specimen of my plant, to remove all doubts as to identity. The spot where it grows, is not more than a hundred yards from the top of Westow Hill, Norwood, going towards Dulwich.—*Wm. Ilott; Bromley, Kent, June* 5, 1843.

328. *Note on Centranthus Calcitrapa.* The following notice of

Centranthus Calcitrapa is at your service, if you think it worth inserting among your Varieties. It is now fifty, if not sixty, years since I first saw this plant on a wall at Eltham, where it was well known to the London botanists, who, I believe, always thought it had escaped from Sherard's garden, and it was therefore considered a naturalized plant, not to be admitted into a British Flora. We also used, at the same time, to find it on the wall of a garden at Enfield, in Middlesex, which had formerly been that of Dr. Uvedale, the friend of Plukenet, in which was then a celebrated cedar of Lebanon. Not having been that way lately, I do not know the present state of the place.—*Edwd. Forster; Woodford, June* 6, 1843.

329. *Note on Myosotis sylvatica.* I find Myosotis sylvatica growing abundantly in several ash plantations in this neighbourhood. It flowers throughout the month of May and the early part of June, and during this period makes a very splendid appearance. I have recently observed a beautiful variety with pure white flowers, which I think is not common; a specimen of it I now enclose. — *Thomas Bentall; Halstead, Essex, June* 7, 1843.

330. *Note on Equisetum fluviatile*, Sm. It is highly desirable that the controversy respecting Equisetum fluviatile should be settled as early as possible, and surely there can be no great difficulty in the matter. About Manchester it is one of our *very common* plants, growing in woods, pastures, meadows, and moist gravelly banks, but I never yet met with it *growing in water*. The nearest approach to the latter habitat is in the wood below Arden Hall, Cheshire, where it flourishes *in a swamp*, to the height of six or seven feet. Now the branched state of E. limosum, which is not unlike fluviatile in general appearance, completely fills up many of the ponds in this neighbourhood, and I am therefore induced to think it possible that the two plants may sometimes have been confounded, and that thus the question as to the true habitat of E. fluviatile has originated. At Reddish, yesterday, I noticed a cow in one of the limosum ponds, eating off the tops of this species; but whether from a liking to the Equisetum, or to the Glyceria fluitans which was growing with it, I am unable to say.—*Joseph Sidebotham; Manchester, June* 9, 1843.

331. *Note on Fragaria elatior.* I am almost inclined to believe that the authors of the various works on the British Flora, must have written their descriptions of Fragaria vesca and elatior, without having seen specimens of the latter. According to Sir W. J. Hooker, the hairs of the pedicels are closely pressed in F. vesca, but widely spreading in elatior; this is the only character given by which we are

to know the two plants apart. Dr. Withering gives no other, except size; and, if I remember rightly, Sir J. E. Smith is equally obscure on this point. When it is borne in mind that pubescence varies much with situation, the above character seems but a frail one to depend on, especially as there appears to me to be a far more striking distinction by which F. elatior may at once be recognised. In F. vesca, the petals are *white*, both in the *limb* and *claw*, and their *length* and *breadth* are about *equal*, the limb has *two slight notches*, and the *claw* is very *indistinct*. The petals in F. elatior are in length only equal to *two thirds* of the *breadth;* the *limb* is *white* and perfectly *entire*, the *claw* is quite *distinct*, and *bright yellow*. I found the two species growing together in Earl Bathurst's park, in this neighbourhood, and was much struck with the difference between them; the flowers of F. elatior are far handsomer than those of vesca. — *Alfred Knight; Cirencester, June* 13, 1843.

332. *Anemone Apennina found in Yorkshire.* I send you a specimen of Anemone Apennina, collected this spring in a wood near Otley, Yorkshire, by Miss Garnett. I am not aware of its having been found in this county before.— *Wm. Ainley; Bingley, June* 20, 1843.

333. *Note on Carex boenninghausiana*, Weihe. I have for some time past had in my herbarium two specimens of a Carex labelled C. axillaris, from Crichton Castle, Scotland. I had long felt considerable doubt whether they were properly referred to that species; though I was pretty certain they did not belong to C. remota, to which the Crichton Castle plants are referred by Mr. Edmonston, (Phytol. 407 and 522). A few weeks ago I had occasion to send my Carices to Mr. Gibson, of Hebden Bridge, for his examination, but without expressing my doubts of this species' being correctly named, as I did in several other instances. On their return, I found that Mr. Gibson had pointed out the differences between my plants and the descriptions of C. axillaris as given by Hooker, in the 'British Flora,' and by Mr. Wilson and Dr. Wood, (Phytol. 299 and 300) as well as Mr. Leighton's figure of the fruit of C. axillaris. I now find that my plants are the C. boenninghausiana of Weihe, a species introduced to the notice of British botanists by Mr. Babington, in his lately published Manual. It has the habit of C. axillaris, but differs from that species chiefly in the nearly entire beak of the fruit being "serrated from *below* the middle," in the glumes about equalling the fruit, their midrib "not reaching the point," and in the bracts not being auricled at the base, but having a narrow brown ligule passing round the rachis. — *Geo. Luxford;* 65, *Ratcliff Highway, June* 21, 1843.

334. *Asperugo procumbens a Kentish Plant.* The cares and duties of the day being finished, I strolled out, a few evenings since, in the direction of the Abbey Wood, beyond Erith village, when after a lengthened ramble in the neighbourhood of Plumstead, and towards Plumstead church, I chanced to meet with a plant I had never before seen, and had not hoped to find in this county, namely, the extremely scarce and interesting Asperugo procumbens, *Linn.* It occurs sparingly in one or two places in a narrow bushy lane, part of the foot-way leading from the marshes at the Thames-side to Plumstead church-yard. The plant appeared to have been somewhat injured — probably through the late almost incessant rains — but was in other respects very luxuriant and beautiful. Irvine, in his 'London Flora,' mentions the Asperugo as having been found in Essex, but, if I remember rightly, does not give any recently verified habitat for it. This notice is sent for publication in 'The Phytologist,' simply from a sincere desire to add an humble mite of information to the general record already contained in the pages of that most useful periodical; and therefore I should be exceedingly sorry to find that my having done so should lead to the *eradication* of this rare plant, in what I believe to be its only known station in Kent. The Asperugo is fragile and delicate, and, like its congeners, Lycopsis, Lithospermum, and other Boragineæ, loses its beauty sadly in drying.—*Edward Edwards; Bexley Heath, Kent, June* 22, 1843.

ART. CLV.—*Proceedings of Societies.*

BOTANICAL SOCIETY OF EDINBURGH.

May 11, 1843.—Dr. Neill, President, in the chair. John Kirk, Esq., was elected a resident fellow. Mr. Brand read a communication from Dr. Joseph Dickson of St. Helier's, Jersey, respecting some recent discoveries in the Flora of that island.

Dr. Neill communicated an interesting letter from Mr. Brackenridge, who was at one time a journeyman in the experimental garden here, and now holds the post of botanical curator at Washington. We insert full excerpts from his letter, the more readily, that his successful career may encourage others of his profession to similar exertions. Mr. Brackenridge writes:—"I spent the first fourteen months in the United States very much to my satisfaction, as foreman to Mr. Buist, who has one of the largest plant establishments in America. When the South Sea expedition was organised, I was induced by Mr. Poinsette, the Secretary of War, to accompany it in the capacity of Assistant-botanist and Horticulturist. The voyage lasted nearly four years, and my compensation during the last three years was 1200 dollars per annum. The squadron (under the command of Lieutenant Wilkes) on its way out touched at Madeira, the whole of which we scoured. I ascended the Peak of Ruive (6246 feet high) almost to its very summit. It is covered with dense forests of Erica arborea and Mediterranea (which some travellers have called *Pine trees*). Several of these heath trees are forty feet high, and at eighteen inches from the ground their stems are two feet in diameter,—E. Mediterranea always the largest. At the very summit is a small species (perhaps new), in habit like Mr. M‘Nab's E. ramulosa. The Madeira mahogany (*Laurus Indica* and *fœtans*) is in great abundance, and as large as English oaks. In five days we collected 460 species of plants on the island. At the Cape de Verds, Rubiaceous annuals and grasses were the principal plants found. But Brazil, at which we next touched, may be denominated the head-quarters of Flora. I went about 150 miles inland, in a N.E. direction, from Rio de Janeiro, travelling most of the way through forests of flowering trees, fantastically adorned with innumerable parasitical and epiphytal plants. These trees were often propped up by aërial roots, which reminded one of the rigging or stays of a ship. The undergrowth in such places consists of palms, arborescent and many other ferns, with a goodly number of Solanaceous and Rubiaceous shrubs. The Organ Mountains, seventy miles from Rio, after all that Mr. Gardner and others have done, abound in thousands of fine plants not yet known. I spent about eight days on these mountains, and found plants so varied and attractive that I did not know well which to select. On rocks there are Gesnerias, Gloxinias, Cacti, Tillandsias and Orchideæ in the greatest profusion. I calculate that more than *one half* of the plants of Brazil are still unknown to botanists. Insects, birds and quadrupeds are as varied, in proportion, as the vegetable kingdom. We spent about two months on Tierra del Fuego. Here was a contrast to Brazilian vegetation: stunted birches, with Misodendrums in tufts like birds' nests on their tops — scrubby barberries — winter bark — and Embothrium (a splendid Proteaceous shrub), were the characteristic features. The face of the hills is covered with spongy, mossy turf, in which we found a Primula (like Scotica), Drosera, Pinguicula, several species of Pernetha, a Myrtus, and the charming Calixenia; with many nice things which I thought well adapted for your alpine frame.

"We reached Chili in the dry season, so that we did not find much in flower till we arrived at the mountains. Behind Santiago, on the Andes, at the region of perpetual snow, we found an immense number of alpine plants belonging to genera and tribes new to us. Figure to yourself ten or twelve kinds of Umbelliferous plants, with heath-like leaves, and fruit as large as that of Heracleum, and yet none of them over an inch in height. In Peru, behind Lima, we crossed the Andes at the height of 16,000 feet, and descended a considerable way on the opposite side, along one of the branches of the Amazon. This was a rich journey for us in plants,—fine Rhododendrons at the height of 13,000 feet. At the base of the snow was a dense sward of plants, none of them over an inch high, principally composed of Saxifrages, Compositæ, Gentianas, and curious Calceolarias. At 14,000 feet we found vast patches of an Echinocactus, so wrapped up in its own wool, that at a distance we took the patches for sheep. The scenery here was of the grandest kind. We saw some splendid Cacti, Alstrœmerias and Tropæolums, and on our way down, fields of T. tuberosum and Oxalis crenata. Very little rain falls in the vicinity of Lima, so that to raise fruit and vegetables recourse must be had to irrigation. The Cherimolia (Annona tripetala) is here the finest of all fruits I ever tasted.

"You will, no doubt, have heard of our discovering an Antarctic continent, (Ross says 'tis only a batch of islands). Of this I can't speak, having been left at Sydney with the other scientific gentlemen. Here we chartered a schooner, and went to New

Zealand, where we spent eight weeks. This same New Zealand is not the fine country that the English government and land speculators crack it up to be. The climate is very wet, and the soil cold and poor — consisting principally of a stiff yellow loam, on great part of which nothing grows but a species of Pteris, whose roots form the principal food of the natives. The surface of the country round the Bay of Islands is very irregular,—high ridges and valleys succeeding each other in rapid succession. In some of these valleys, from eight to ten species of Coniferous trees are found—among them the Courie pine (*Agathis Australis*) 120 feet high.

"Leaving New Zealand, we touched at Tongataboo on our way down to the Fiji Islands—260 in number—all which we surveyed. In doing this, two of our officers were brutally murdered by the natives. We had also a proof of these islanders being cannibals, as they brought in a canoe, alongside of our ship, part of a human body, which they were eating. We discovered several new islands on the line in passing to the Sandwich Isles. The grandest sight seen during our cruize, was the volcano on the Island of Hawaii. After spending six months on the north-west coast of America, our voyage lay again by the Sandwich Isles; and searching for a near passage to the China Sea, we were led among the Sooloo Isles and Straits of Balabac, then down to Singapore, which is a very flourishing place. Here I met a cousin of Sir Walter Scott's, who looks very much like what the old man was.

"During this voyage we collected and dried upwards of 10,000 species of plants; sending also a great many live ones and seeds to the National Institute at Washington, to which I am at present attached. To me the most interesting of these plants is a species of Nepenthes from Singapore, bearing pitchers much larger every way than those of the N. distillatoria, and, when perfect, capable of holding a pint of water. There are two other species at Singapore, one with many small pitchers in bunches, on a woody stem, found in pools of water, while the other covers a low sandy island in the Strait, about three miles off the road-stead. At Manilla there is a species distinct from any I have seen elsewhere."

Professor Graham exhibited some very beautiful and interesting exotics, recently brought into flower in the greenhouses and stoves; and afterwards accompanied the members over the garden, which presented a most charming appearance. Every season it is becoming more and more developed; and the late alterations reflect much credit on the learned Professor, and his able coadjutor, Mr. M'Nab.

June 8, 1843.—Professor Graham in the chair. Donations were presented to the library from C. C. Babington, Esq., Cambridge, (his 'Manual of British Botany'); from Dr. J. K. Maly of Gratz; L. W. Dillwyn, Esq., and others.

Mr. James M'Nab exhibited specimens of Laburnum, presenting some remarkable anomalies. He stated that several years ago, a tree was sent from the Epsom nursery to the Royal Botanic Garden here, as a curiosity, bearing *three* distinct varieties of laburnum on the same root, without any further engrafting than that of working the red laburnum on the yellow. This tree is now to be seen in flower, the yellow and red flowers being predominant. Last spring he observed a tree of the red laburnum in the Horticultural Garden, bearing several large tufts of Cytisus purpureus, with one small shoot of the yellow. The same tree, this year, has ten distinct shoots of the yellow, and a quantity of those of C. purpureus.

On Monday last, at Dysart house, he observed two trees, one bearing Cytisus purpureus and C. Laburnum coccineum, the other C. Laburnum and C. Laburnum coccineum; but neither of them having more than two varieties. This afternoon he examined plants of the *red* laburnum in Messrs. Lawson's nursery, three years grafted, and found several of them producing shoots of the *yellow*, but only one of them having C. purpureus; and in the nursery of Messrs. J. Dickson and Sons, several of the plants, two years grafted, have shoots of the *yellow* but none of the *purple*.

The red laburnum first appeared at Paris in 1828, in the nursery of Mr. Adam, and was a hybrid between the common laburnum and Cytisus purpureus.

Dr. Graham observed that it was difficult to explain the cause of this phenomenon, namely, of mules reproducing the different forms on one plant. It had occurred also in plants of the Cactus tribe, but had no parallel in the animal kingdom -- there the general form and habit merely are affected by crossing. He considered the subject to be one of much interest, as the phenomenon was at variance with the existing theories.

Mr. M'Nab exhibited recent specimens, in flower, of Orchis ustulata and Ophrys fucifera from Kent, which had been kindly procured by Lady Harvey for the meeting.

Dr. Douglas Maclagan presented to the Society, from Mr. John Scott, F.B.S., Greenock, a series of specimens of the more important kinds of timber in use for the purposes of ship-building. The author mentioned, among others, the following kinds of timber.:—Yellow pine (*Pinus variabilis*) from North America. Pitch pine (*P. rigida*) from Carolina. Red pine (*P. resinosa*) from Quebec. These kinds are chiefly applicable to making deck-planks, or for light spars.

The American or rock elm (*Ulmus Americana*) and the black birch (*Betula lenta*), were likewise noticed along with beechwood, as being the kinds best adapted for keels, bottom planks, and other parts of ships which are submersed in water.

British and American oak, and East Indian or Malabar teak (*Tectona grandis*), were mentioned as being of very general applicability to the purposes of the shipwright, as also the African teak, or, as it is often called, African oak—the tree yielding which is still unknown to botanists. Two varieties of hard and heavy woods were pointed out as being occasionally imported among African teak, and having similar qualities, but which are unknown to botanists or wood-merchants.

Of timbers imported from the West Indies, two deserve remark. The first is the Mora or Morra timber *Mora excelsa*, Schomb.), which is a large and valuable timber, now introduced in considerable quantity from British Guiana: it has a fœtid odour when scraped. The other is the green-heart timber, produced by an unknown tree of British Guiana, a heavy, hard, and valuable timber, well adapted for ship-building, and now extensively used in the Clyde. Dr. Maclagan had sent specimens of the fruit of this tree to Dr. Lindley and Sir W. Hooker, both of whom considered it as Lauraceous, but had been unable to refer it to any known genus. He stated to the Society that this tree was known in Demerara by the Indian name of Bebeeru, and also by the Dutch name Sipeeri; and that the bark of it had been found, by Mr. Rodie, to contain a vegetable alkaline matter, which possessed the power of curing agues. Recent experiments of his own had shown that there were two distinct alkalies present in the bark and seeds of this tree.

Previous to the reading of these papers, Professor Graham, accompanied by a large party, visited the greenhouses, where he pointed out some of the more rare and interesting plants, with which they are now literally crowded. It was pleasing to see so many specimens, brought together from every climate and region, in the most thriving and luxuriant state, with scarcely an exception.

BOTANICAL SOCIETY OF LONDON.

June 2.—John Reynolds, Esq., Treasurer, in the chair. Donations to the library were announced from the Academy of Natural Sciences, Philadelphia, and Dr. Tilley. Mr. W. Andrews, Secretary of the Natural-History Society of Dublin, presented an interesting collection of Irish plants, comprising specimens of Arundo lapponica, Arenaria ciliata, Lathyrus maritimus, Trichomanes speciosum, several varieties of Saxifraga Geum, &c., many of them being from new localities. Specimens of Anemone ranunculoides, found wild in a wood near Worksop, Nottinghamshire, were presented by Mrs. Margaret Stovin. Mr. F. Bainbridge presented a specimen of Lecidea Wahlenbergii, *Acharius*, a lichen new to the British Flora.*

Read, the continuation of a paper commenced at the last meeting,—"On the Groups into which the British Fruticose Rubi are divisible," by Mr. Edwin Lees, F.L.S., &c. Before the Rubi can be adequately understood so as to be reduced into groups, their mode of growth must be fully investigated; and it will then perhaps become evident what points, from their greater permanency, are to be relied upon for general as well as specific characters.

The author had already traced the mode of growth of the British fruticose Rubi, in a paper read before the Botanical Society of Edinburgh. The general idea of the *biennial* continuance of the Rubi is incorrect; all are *triennial* by the renewed growth of smaller flowering branches from the barren stems, or the bases of the withered panicles of the second year, or by the barren stems shooting forth a *second* crop of barren stems, which flower the *third* year; and that often the existence of an individual bramble, independently of fresh shoots from the root, is protracted to the fourth or fifth year. The consequence of this is, that no specific distinction whatever can be drawn from the *inflorescence*, which may be long the second year, and is much shorter the third; while it often happens that when a barren stem becomes prostrate, the panicles of flowers rising from the extreme end, are twice or thrice as long as those nearest the main shrub. This fact of the extended growth of the Rubi has been lost sight of, and hence puzzling productions have been considered as new species, just as the R. fastigiatus of Weihe and Nees is but a form of R. plicatus, as is now admitted by Essenbeck himself, from its exhibiting a smaller growth of third year's flowers.

Undoubtedly the *barren stem* offers the best, if not the only plan of discrimination in subdividing the Rubi into groups, especially if we take into consideration, in combination with it, the *erect* or *arched* mode of growth and continuance of vitality. The leaves are so exceedingly variable, in shape, size and hoariness, as to be almost useless in this respect. A table was appended to the paper, by which was seen at a glance what the differences really were by which groups could be defined; and it would appear, in fact, that these resolve themselves almost entirely into the perfect smoothness, glaucosity, or more or less of hairiness and glandulosity of the barren stems.

Commencing then with Rubus cæsius and ending with R. Idæus, it will appear that *seven* groups are easily separable from each other, and passing from one into the other, in a very natural manner. These, at all events, may be considered the smallest number of species into which the Rubi can be classed, without confounding really different things, while if we proceed further into minuter distinctions, these typical forms will become groups, under which the various varieties, species, or sub-species of each, will be referable.

---

* Phytol. 616.

1. *Cæsii.* — Having the barren stem round, bloomy, covered with unequal prickles, trailing, rooting. Rubus cæsius and its various derivations.
2. *Glandulosæ.* — Barren stem angular, hairy and prickly, setose, very glandular, arched or trailing, rooting. This group will include R. radula of Weihe and Nees, R. Koehleri, fusco-ater, &c.
3. *Villicaulæ.*—Barren stem angular, very hairy, but without glands, prickly, arched or decumbent, rooting. Including R. villicaulis, W. & N., R. leucostachys, Smith, &c.
4. *Fruticosi.*—Barren stem angular, glaucous, prickly, arching, rooting. Including R. fruticosus and discolor.
5. *Nitidi.* — Barren stem angular, almost smooth, wiih few prickles, rooting rarely. R. affinis, nitidus, rhamnifolius, &c.
6. *Suberecti.*—Barren stem angular, very smooth, nearly erect, not rooting. Including R. suberectus, Anderson and Smith, R. plicatus, W. & N., and R. fissus, Lindley.
7. *Idæi.* — Barren stem round, downy, covered with innumerable, small, dilated prickles, erect. R. Idæus and varieties.

There is, however, it must be admitted, an anomaly in the first group, which can only be got over by subdividing it into two (as done in the tabular view), for the excessively glandulose assurgent stem of Rubus dumetorum has a very different aspect from the prostrate *bloomy* one of R. cæsius; and yet it is demonstrable that the former is really derivable from the latter: so that although the blue berries of the dewberry would at first sight appear so discriminative, varieties arise with fruit altogether of a different aspect. It must be borne in mind, however, that this is in a great degree in accordance with the well-known laws of cultivation. Rubus dumetorum is R. cæsius excessively developed in *leaves* and *flowers*, but the fruit is mostly abortive or imperfect, while R. cæsius, in its normal prostrate form, with thin foliage and small flowers, produces on the humid ground the finest fruit of any of the fruticose Rubi.

The first group — Cæsii — must therefore be necessarily divided into two; but the other groups will be found to maintain the characters assigned them pretty correctly, and may therefore be depended on. It is true that occasionally some of the Villicaulæ will exhibit a few glands on their stems or panicles, under circumstances of great luxuriance of growth or exposure, but nothing to be compared with the excessive degree of glandulosity of the Glandulosæ. Then it is true that the barren stem of the second group of Cæsii is nearly as glandular as in the Glandulosæ, but the former will show their affinity with R. cæsius by the calyx being *involute* on the fruit, not *reflex* as in the latter.

The Fruticosi always preserve an independent marked character; and the Nitidi, if, in one of their forms—R. affinis—coming near to the Suberecti, may yet be always well distinguished by the arching barren stem, which, when exposed, is very stiff and rigid in the latter, almost as much so as in R. Idæus. This is well observable in the barren moors of North Wales.

Sketches of the barren stems of the different groups were exhibited. That the forms of each group sport into each other according to situation and exposure, without much limitation, is highly probable, but Mr. Lees had met with no decided cases of hybridity. Specimens of various species accompanied the paper, and are deposited in the Society's herbarium.—*G. E. D.*